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Perceived interaction needs of distance learners participating in an agricultural distance education degree program

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Perceived interaction needs of distance learners participating in an agricultural distance education degree program

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has met the thesis requirements of Iowa State University

Signatures have been redacted for privacy

DEDICATION

This thesis is dedicated to my Father, Issac Calvin Gray. In honor of his many years of love, support and encouragement. Daddy you are truly my role model. Thank you for always being there for me.

I Love You,

Timika

TABLE OF CONTENTS

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CHAPTER 1
INTRODUCTION

Distance education is increasing the educational opportunities for many adult learners. It is the fastest growing instructional trend in the world. The accessibility of education, through the use of communication technologies and instructional systems, is making distance education a growing alternative to traditional classroom instruction for adult learners (Main & Riise, 1995).

Today distance education opportunities are offered through a wide variety of media (Scholosser & Anderson, 1993). Opportunities such as video tape, Internet, satellite, and the fiber-optic interactive viewing systems are available. These media allow agricultural educators to provide educational opportunities, both live and delayed through the use of video storage mechanisms, to adults who would not have access to education due to work, family, and social commitments, (Schoenfelder, 1995).

Distance education is becoming a part of everyday existence and may be viewed as the norm (Dede, 1995). However, questions of interaction needs of distance learners are of great concern. Acker and McCain stated that "interaction is central to the social expectations of education in the broadest sense and is in itself a primary goal of the larger educational process and that feedback between learner and teacher is necessary for education to develop and improve" (Acker & McCain, 1993, p.11). Nevertheless, some researchers have found that distance learners perform better than traditional learners, and their success is attributed to their increased commitment, maturity and motivation (Jackson, Raven & Newman, 1996).

Research by Kearsley (1995) stated that consideration should be given to the fact that perceptions of interactivity may be as important as actual interaction. Fulford and Zhang (1993) found that a predictor of student satisfaction in a course was not necessarily personal interaction, but the perception of overall interaction. When conducting research about the interaction needs of distance learners, it is imperative that researchers understand what distance learners perceive as interaction.

Daily distance learning opportunities are increasingly being transformed into a new educational paradigm of distributed learning (Dede, 1995). This new paradigm has many implications for agricultural education. Implications range from interaction preferences to how interaction influences learner academic performance. This study will focus on the distance learners' perceived interaction needs.

Need for Study

Distance education is an area of research that is being examined by the educational community (Willis, 1994). A major concern for distance educators is the characteristics and educational needs of students who are taking distance education courses. Most agricultural educators believe extra work is necessary to effectively plan and deliver distance courses (Jackson & Bowen, 1995). Hence, there is a need to discover the interaction needs of distance learners. Discovering the interaction needs of distance learners will allow agricultural educators to provide a learning atmosphere that is meaningful to the students.

Interaction has been described as important to the instructional process relating to distance education today (Jackson, 1994; Main, 1995). Fulford and Zhang (1995) indicated that interaction is linked to satisfaction, motivation, quality and perceived learning. Thus, the

quality and type of interaction provided in distance education courses concerns educators because learner satisfaction and perceived learning are affected by interaction (Scholdt, Zhang & Fulford, 1995).

Studies indicate that the more interaction that is present in a distance education setting the more positive the students' attitudes will be toward the experience (Jurasek, 1993). Because some previous research has indicated that learner-instructor interaction is not an important factor to students in a distance education setting, the question is: what do students perceive as interaction (Fulford & Zhang, 1996). What can agricultural educators do to better meet the distance learners' interaction needs?

Purpose and Objectives

The purpose of this study is to determine the perceived interaction needs and performance of distance learners in agricultural courses taught via distance education through the Off-Campus Professional Agricultural Program at Iowa State University. The objectives are as follows:

1. Describe selected demographic characteristics of students enrolled in courses offered through the Off-Campus Professional Agriculture Program.
2. Determine distance learning delivery method preferred by distance learners.
3. Compare student performance to mode of taking a course.
4. Identify interaction needs of distance learners.

Implications/Educational Significance

Research about interaction in a distance education setting has been the subject of study for many years. Agricultural educators are very interested in providing distance learners with the best experience possible. At a time when distance education is one of the

fastest growing instructional patterns in the world, it is very important that agricultural educators are adequately prepared to supply distance learners with the best educational experience possible. In order to create an educational atmosphere conducive to learner satisfaction, it is important that agricultural educators know what the learners perceive as interaction. From this information, educators will better know how to create an atmosphere that provides learner satisfaction in a distance education setting.

Limitations

The researcher attempted to maintain internal and external validity in the study. The following are the limitations under which this study was conducted.

1. The findings of this study are limited to the population studied.
2. The accessible population consisted of students enrolled in courses offered through the Professional Agriculture Program at Iowa State University during Spring semester 1997.
3. The instrument developed by the researcher was based upon a similar instrument used in several studies for similar purposes.

Assumptions

It was assumed that:

1. The participants in the study provided accurate information with a high degree of integrity.
2. The participants in this study fully understood and could interpret the items in the questionnaire.
3. The written questionnaire was the best means to obtain the necessary information.
4. The grouped data collected from the questionnaire had the potential to influence the educational system.

CHAPTER 2
REVIEW OF LITERATURE

Introduction

There is a need to understand what students perceive as interaction in distance education courses. It is obvious that distance education is here to stay. This review of literature contains information about Off Campus Professional Agriculture Program, needs assessment, psychology of perceptions, adult education, distance education, and the various forms of interaction.

Off-Campus Professional Agriculture Program

The Off-Campus Professional Agriculture Program provides non-traditional students with an opportunity to earn a Bachelor's or a Master's degree without physically taking courses on campus. The courses offered are taught by videotape or through the Iowa Communications Network (ICN). The degrees earned in the Professional Agriculture Program are equivalent to degrees earned on campus. The Professional Agriculture Program is a unique distance education program and is a major component in the fulfillment of the Iowa State University mission of service, teaching and research in the state of Iowa.

Needs Assessments

Van de Ban and Hawkins (1996) define needs as the condition in which a person experiences a lack of something and strives to overcome this lack. Those persons become informants and are able to identify perceived needs of individual programs. When needs are assessed, effective programming decisions can be made because the opinions of those who will be served have been revealed. Educators are responsible for identifying and prioritizing

the needs of learners to maintain and maximize program results that will improve planning, implementation, and evaluation of programs (Seevers et al., 1997).

Psychology of Perceptions

Perception is a very difficult term to define (Dember & Warm, 1979). "Perception is profoundly influenced by two additional factors: social and cultural custom, and the personality of the perceiver" (Allport p.299, 1960). It is a private experience of individuals (Dember & Warm, 1979). It would be very difficult to find two people with the same exact experience because what people perceive is a combination of external messages and personal subjective meanings (Allport, 1960).

Ideally the entire perceptual phenomena is a major factor in demonstrating how major social forces obtain psychological status and exert their impact in our lives (Klein, 1970). Perception represents the individuality of different personalities among people. The philosopher Kant believes, our minds give shape and form to the raw data of perception (Schultz & Schultz, 1996) Thus, we have a picture of what things should be like in our mind and try to use the objects around us to create that picture.

Adult Education

Research has indicated that adults bring different experiences and circumstances to a learning environment than traditional learners (Seevers et al., 1997). Those experiences and circumstances can be explained by Knowle's model of andragogy, which includes the following assumptions:

- "adults tend to be self-directing (they determine their own learning needs)

- adults have previous experiences that can serve as a resource for learning
- adults' readiness to learn is frequently affected by their need to know or do something; therefore, they have a more problem-centered approach to learning as opposed to a subject-matter approach
- adult learners are seeking knowledge to fulfill societal expectations or roles (i.e., professional or family responsibilities). There needs are for more immediate applicability than learning for future use
- adult learners are more intrinsically motivated (the need/desire to learn is more important than grades, awards, etc.(Knowle, 1988, p.97)

Adult learners' interests lie in obtaining information that will allow them to obtain a degree or advancement in their professional career.

Distance Education

Distance education can be defined as education in which the instructor and learner are physically separated during most of the instruction. The idea of distance education has been in existence since the beginning of the nineteenth century and has become a worldwide phenomenon (Verduin & Clark, 1991).

Distance education began from a reaction to specific access problems to education (Willis, 1994). It opened up possibilities for adults who did not have access due to work and family commitments (Schoenfelder, 1995). With the continual growth of distance education there is an increased amount of growth in knowledge throughout the world (Willis, 1994).

Distance education allows educators to reach more diverse audiences (Dede,1995). The idea of education being a "classroom process" is changing through the rising interest in distance education. Today, education is "learner-centered." Learners may access education

universally through the use of technology (Dubois, 1996). Emphasis in education is shifting toward providing customer satisfaction by meeting the educational needs of society.

Moore (1987) stated that distance education would be a very significant part of the universe for adults, with a family and full-time jobs, that are interested in extending and continuing education. Distance education is being used as a tool to educate society. Developments in distance education are being driven by many factors, such as state mandates for curriculum changes and mandates to serve underserved populations.

> "The cost effectiveness of distance learning is that a teacher can reach a number of students - - ten, twenty, even thirty – in several different districts while teaching once: whereas the same teacher would not be able to teach three or four students in one location at a time, five or ten times over. The cost of such time and travel would be prohibitive (Rezebek, 1988, p.1)."

Distance education allows educators to use technology as a way of maximizing limited resources. Learners have an opportunity to access better learning resources than in the past (Moore & Kearsley, 1996).

Verduin and Clark (1991) described four attributes that are included in a distance education program:

1. The separation of teacher and learner during at least a majority of the instructional process
2. The influence of an educational organization including the provision of student evaluations
3. The use of educational media to unite teacher and learner and carry course content
4. The provision of two-way communication between teacher, tutor, or educational agency and learner (p.11)

Today, earning college credit through distance education is very popular (Verduin and Clark, 1991). Most communication in distance education occurs through electronic media such as broadcasts, recordings, satellite, fiber-optic transmissions and interactive telecommunication by computer, audio and video teleconferencing or a combination of these media. (Moore, Thompson, Quigley, Clark and Goff, 1989).

Interaction in Distance Education

Previous research has indicated that perceived level of interaction is correlated with the students' attitude toward distance education (Zhang & Fulford, 1994). Thus, it is possible that students may not expect interaction in distance education settings. Soloman's model proposes that the amount of learning via a given medium is proportional to the amount of invested mental effort (Fulford & Zhang,1995). Students live up to their own psychological perceptions of what their classroom should be like. Therefore, educators must become sensitive to student perspectives when preparing to meet interaction needs of distance learners (Zhang & Fulford, 1994).

Hillman, Willis, and Gunawardena (1994) stated that the importance of interaction in education is practically natural. Interaction between instructors and learners provides opportunities for educational transactions. It is essential that the distance educator purposefully designs courses that will allow students to interact (Kruh & Murphy, 1990).

Research by Zhang & Fulford (1994) indicated that psychological perceptions of the learner may overshadow the technical ability to create an approximation of a real classroom (psychological concept of interaction dominates technological reality). However, with distance learning being considered as an alternative to the traditional classroom, the

instructional design of the classroom cannot depend upon the intrinsic motivation of the individual students (Main & Riise, 1995). Fulford and Zhang's (1994) research also stated that instructors need to be made aware that the class atmosphere can improve only on students' terms. Main and Riise (1995) strengthened that research by stating that instructors must design courses that are a technological replica of the traditional classroom because quality distance education courses are dependent upon the interaction and participation of the learners.

Weiner's attribution theory stated that students assess their academic performance as either success or failure, react in a related emotional manner (positive or negative) in response to their judgment, and search for the reason that caused the outcome (Schonwetter, 1994). Fast (1995) further strengthened the theory by describing interaction as being verbal or non-verbal actions and reactions of all participants in a communicative event. Interaction is the exchange of communication that occurs between instructors, learners and the technology that takes place in a distance education setting (Verduin & Clark, 1991).

Three types of interaction were described by Moore and Kearsley (1996): learner-content interaction, learner-instructor interaction, and learner-learner interaction. Learner-content interaction involves the interaction that students have with the subject matter (Moore, 1989). Learner-instructor interaction is the instructor maintaining the students' interest and providing motivation to learn and give counsel, support and encouragement to each learner (Moore & Kearsley, 1996). Learner-learner interaction occurs between students either alone or in group settings with or without the instructor (Moore & Kearsley, 1996). Hillman et al. (1994) suggested a fourth type of interaction which is learner-interface. Learner-interface

interaction involves the technological devices used by the learner to obtain content and communicate with the instructor and other learners (Hillman et al., 1994). Distance educators and distance learners must recognize that interaction occurs in various forms in distance education settings.

CHAPTER 3
METHODS AND PROCEDURES OF THE STUDY

Introduction

The methods and procedures of this study were centered around the study's purpose and objectives. All the procedures sought to address the specific objectives of the study. The purpose of the study was to determine the perceived interaction needs of distance learners and performance in agricultural courses taught via Iowa Communications Network. The objectives of the study were to:

1. Describe selected demographic characteristics of students enrolled in courses offered through the Off-Campus Professional Agriculture Program.
2. Determine distance learning delivery method preferred by distance learners.
3. Compare student performance to mode of taking a course.
4. Identify interaction needs of distance learners.

Research Design

The study used was descriptive in nature and focused on the perceptions held by the students who participated in the Off-Campus Professional Agriculture Program the Spring of 1997. The researcher used a mailed questionnaire to collect the data. The data from this study reflect the perceptions at the time of investigation.

Population

The population of the study consisted of students enrolled in courses taught through the Off-Campus Professional Agriculture Program during the Spring 1997 semester. The list of names and addresses were supplied by the Extended and Continuing Education Office at Iowa State University.

The names and addresses of the students were entered into a database file program alphabetically and were numbered to track non-respondents. The numbers corresponded to the numbers written on the questionnaire. The total population size was 113. Because the population size was relatively small, the study focused on the total population and a sample was not drawn.

Instrumentation

The questionnaire consisted of interaction statements and a demographic section. Content and face validity were established by a panel of experts in agricultural education. The questionnaire yielded a Cronbach's Alpha of .95 for reliability. The questionnaire, along with a cover letter and stamped returned envelope was mailed to each student.

The students' perceptions of interaction in distance education were measured according to Moore's categories of interaction. Interaction was measured based on learner-content interaction, learner-instructor interaction and learner-learner interaction (Moore, 1989). Learner-interface interaction, which is the interaction that occurs when a learner must use intervening technologies to communicate, was also evaluated (Hillman, 1994). Fulford, Sherry & Zhang (1996) developed an instrument that measured students' perception of interaction (SPI) in a distance education classroom. This scale yielded a reliability score of .85 and was a subscale for this study.

Interaction statements were measured using a Likert-type scale that ranged from extremely negative (1) to extremely positive (8), and included a (9) response category for does not apply. Interaction statements were developed from a review of relevant literature and instruments used for similar purposes in other studies. Each statement asked the student

to read the statement and circle the number that represented their opinions as to whether the situation described would be a positive or negative learning experience.

Collection of Data

The questionnaire (Appendix A) was mailed to the potential participants on May 27, 1997. A cover letter (Appendix B) explained the purpose and objectives of the study. A self-addressed stamped envelope was included in the mailing. The respondents were asked to complete the questionnaire and return it to the researcher by June 15, 1997. A number was assigned to each individual and the number was marked on the top right hand corner of each questionnaire to identify non-respondents and conduct follow-up procedures. Participants were asked to return the blank questionnaire if they did not want to participate in this study.

The first mailing yielded 36 returns within 19 mailing days. On June 16, 1997, a letter (Appendix C) was sent as a reminder to all of the non-respondents asking them to return the questionnaire. Twenty-two additional questionnaires were returned. A third mailing (Appendix D) was sent out on July 18, 1997 to all non-respondents asking them to return the questionnaire by August 1, 1997. Sixteen more questionnaires were returned. On August 12, 1997 (Appendix E), a final mailing was sent out to all non-respondents. The participants were asked to return the questionnaire by August 25, 1997. A total of seventy-nine surveys were received by the end of August 1997. Sixty-seven surveys were usable for a response rate of 59.3 %. To ensure the most returns possible, some strategies from Mail and Telephone Surveys-Total Design Method (Dillman, 1978) were used for this study.

Table 3.1 Strategies Used With the Learning Experiences Questionnaire to Reduce Non-response.

Strategies
• Used official departmental letterhead
• Assured confidentiality
• Placed demographic questions last
• Used attractive, eye catching front cover, with a graphical illustration, return address
• Provided directions on how to answer questions
• Used vertical flow in the questionnaire and ordered questions according to content
• Mailed materials flat
• Mailed each participants an addressed and stamped return envelope

Source: Dillman, 1978.

Analysis of Data

All data were analyzed using SPSS/PC + personal computer program. Frequencies, percentages and standard deviations were used to describe the data. T-tests and one-way analyses of variances were used to make comparisons among groups of respondents.

CHAPTER 4
FINDINGS

Introduction

The purpose of this chapter is to report the results of this study. This study was conducted to determine the perceived interaction needs of distance learners and their performance in agricultural courses taught via distance education through the Off-Campus Professional Agriculture Program.

Each objective from Chapter 1 will be restated. Under each objective will be a description of the variables and the results of the statistical tests applied.

Objectives

Objective 1: Described selected demographic characteristics of students enrolled in courses offered through the Off-Campus Professional Agriculture Program.

Table 4. 1 shows the occupation of students in the Professional Agriculture Program.

Table 4.1 Off-Campus Professional Agriculture Program Participants' Occupation.

Occupation	Frequency	Percent
Farming	16	24.2
Agribusiness	27	40.9
Agricultural Extension/Education	7	10.6
Other	16	24.3
Total	**66**	**100.0**

Note: Occupation other consisted of chemist, students, maintenance, government, homemaker, lab directors, pharmaceutical employee, finance

Out of the 67 participants, twenty-seven were employed in agribusiness and sixteen were farmers. Twenty-three of the participants listed "other" as their occupation. Most of them were employed with the state or national government in some capacity or in non-agriculture positions.

There were forty-nine males and seventeen females in this study (Table 4.2). The age of the participants in this study ranged from nineteen to sixty. More than seventy-five percent of the participants were between the ages of thirty and sixty. Table 4.4 shows that approximately seventy percent of the participants were married and twenty percent were single. The other ten percent were either widowed or divorced.

Table 4.2 Gender of Off-Campus Professional Agriculture Program Participants'.

Gender	**Frequency**	**Percent**
Male	49	74.2
Female	17	25.8
Total	**63**	**100.0**

Table 4.5 illustrates participants' reasons for taking distance education courses. The participants were taking courses to earn a degree , to improve career performance, or for personal interest. Over 60% of the participants were pursuing a degree. Videotape and ICN courses made it easier for participants to keep their jobs and remain home with their families while meeting educational endeavors. Because of the participants employment and family

committments, more than eighty-five percent of the student population in the Off-Campus Professional Agriculture Program were part-time students (Table 4.6). Those small number of participants that were full-time students were usually between the ages of nineteen and twenty-nine.

Table 4.3 Ages of the participants in the Professional Agriculture Program.

Age of participants	**Frequency**	**Percent**
19-29	16	22.7
30-39	19	28.8
40-49	21	31.8
50-59	11	16.7
Total	**67**	**100.0**

Table 4.4 Marital Status Off-Campus Professional Agriculture Program Participants'.

Marital Status	**Frequency**	**Percent**
Married	47	72.3
Single	14	21.5
Divorced or Widowed	4	6.2
Total	**65**	**100.0**

Table 4.5 Participants' reason for taking distance education courses.

Reason	Frequency	Percent
Pursuing a degree	42	63.6
Improve performance in business/career	18	27.3
Personal interest/hobby	5	9.1
Total	**63**	**100.0**

Table 4.6 Student Status Professional Agriculture Program Participants`.

Student Classification	Frequency	Percent
Full-time	8	12.7
Part-time	55	87.3
Total	**63**	**100.0**

Objective 2: Determine distance delivery method preferred by distance learners.

Table 4.7 shows that twenty-eight participants took courses using the ICN and thirty participants took courses using videotape. Approximately ninety-three percent of the participants said that they would do it again. Overall, more than seventy-five percent of the participants were satisfied to very satisfied with the distance education courses that they had taken. This may be attributed to the fact that videotape and ICN courses allow students to have access to education at times that are convient for them. Therefore, the participants in this study were satisfied because education is now available to them.

Table 4.7 Off-Campus Professional Agriculture Programs Participants' Mode of Taking a Course.

Form	Frequency	Percent
Videotape	30	51.7
ICN	28	48.3
Total	**58**	**100.0**

Table 4.8 Percentages of ICN and Videotape Students Who Would Take Courses Again The Same Way.

Form	Yes	No
Videotape	29	1
ICN	25	2
Total	**54**	**3**

Objective 3: Compare student performance to mode of taking a course.

Table 4.10 provides the grades of the participants in this study. Almost sixty percent of the videotape students received an "A" in their courses and forty-six percent of the ICN students receive an "A" in their courses. Less than ten percent of both the videotape and ICN students received a letter grade below average in distance education courses. Approximately twelve percent of the ICN students received an incomplete or took a course that was not graded. Courses that were not graded were either pass/fail or workshops offered during the Spring 1997 semester. Overall, the mode in which a course was taken did not affect the letter grade that a student received in a distance education course.

Table 4.9 Satisfaction Level of Distance Education Courses by Participants' in the Off Campus Professional Agriculture Program.

Satisfaction level	Videotape Frequency	Videotape Percent	ICN Frequency	ICN Percent
Very dissatisfied	1	3.4	2	7.4
Dissatisfied	2	6.9	0	0.0
Somewhat dissatisfied	1	3.4	2	7.4
Somewhat satisfied	1	3.4	1	3.7
Satisfied	11	37.9	15	55.6
Very Satisfied	14	44.8	8	25.9
Total	**30**	**100.0**	**28**	**100.0**

Table 4.10 Grades of Participants in the Off-Campus Professional Agriculture Program.

Grades	Videotape Frequency	Videotape Percentage	ICN Frequency	ICN Percentage
A	13	59.1	12	46.3
B	6	27.4	5	19.2
C	1	4.5	5	19.2
D	1	4.5	0	0.0
F	1	4.5	1	3.8
Incomplete or Non- Graded	1	4.5	3	12.5
Total	**22**	**100.0**	**26**	**100.0**

Objective 4: Identify interaction needs of distance learners.

The interaction needs of students were measured by means and standard deviations of the items on the questionnaire. Students were to respond if questions were either positive or negative to their learning experiences in a distance education setting

Means and standard deviations of the sixty-five interaction statements may be seen in Appendix I. The list of questions that appeared on the instrument may be read in Appendix A. Table 4.11 illustrates the questions that participants believed were slightly to moderately negative to their learning experiences. The moderately positive to very positive statements are illustrated in Table 4.12. Subject-matter content of classes seems to be more important to the students.

The questionnaire was divided into subscales to identify specific interaction needs of students. Interaction was measured by the categories identified by Moore (1989) and Hillman et al (1994): learner-learner, learner-instructor, learner-content, learner-interface, and Fulford, Sherry and Zhang's (1997) students' perception of interaction scale (SPI). Table 4.13 shows that each subscale had a Cronbach Alpha above .65. Items used in each scale are found in Appendix H. Table 4.14 shows the means, standard deviations and t-values of the interaction subscales by mode. There is no significant difference between videotape and ICN students when measured against subscales. In consistency with the entire study, learner-content interaction had the highest means. Table 4.15 shows no difference in gender and responses.

As can be seen in Table 4.16 the correlation among the subscales and age ranged from very high to low association. The terminology for describing the relationships found on

Table 4.17. Because technology is very significant to distance education there was a very high correlation between learner-interface subscale and the age of the participant. Items in the learner-interface subscale related to the use of the ICN room and the instructional technology. A substantial relationship occured between the age and learner-content.

Table 4.11 Statements that were rated slightly to moderately negative to learning experiences.

Statement	Mean
Students seldom ask each other questions.	4.62
There is little interaction between students.	4.30
The instructor seldom answers the students questions.	4.15
Having to wait during class for the instructor.	3.64
The instructor seldom answers the students' questions.	3.81
In class, students seldom state their opinions to each other.	4.32
Students seldom answers each other questions.	4.12
Students seldom answer questions that the instructors asks.	4.44
Interaction is low in class.	3.81
Being the only student at a remote-site.	4.59
Other student's fear of distance education technology.	4.77
Poor instructor use of distance education technology.	4.05
Being physically separated from the teacher.	4.68

Note: 1=extremely negative;2=very negative;3=moderately negative;4=slightly negative;5=slightly positive;6=moderately positive;7=very positive;8=extremely positive

Table 4.12 Statements that were rated moderately positive to very positive participants' learning experience

Statement	Mean
Privately discussing course work with instructor.	6.44
Privately discussing course work with other students.	6.49
Using computers during class activities.	6.41
Instructor provides students' guidance regarding in class assignments.	6.39
Program support staff.	6.53
Program advisor.	6.70
Receiving course materials on-time.	6.44
Using computers outside of class for assignments.	6.49
Instructor asks me a question related to class content.	6.41
Instructor evaluation of my class work.	6.40
Personal evaluation of my class work.	6.40
Use of guest speakers in class.	6.67
In-class group activities.	6.31

Note: 1=extremely negative;2=very negative;3=moderately negative;4=slightly negative;5=slightly positive;6=moderately positive;7=very positive;8=extremely positive

The participants in this study general concern consistently seemed to be content. The Participants were very interested in obtaining the information that they needed to either obtain a degree or fulfill professional development requirements that are necessary to advance to the next employment level.

Table 4.13 Reliability coefficients of Interaction statements' subscales

Interaction Style	N of items	Reliability coefficient
Learner-Learner	10	.66
Learner-Instructor	15	.77
Learner-Content	13	.84
Learner-Interface	14	.79
SPI	13	.81

Table 4.14 Mean and Standard Deviation Comparison of Interaction Subscales by Mode

Interaction	N	Video Tape N	M / SD	ICN N	M / SD	t-value	Sig.
Learner-Learner	10	24	5.16 / 1.33	28	5.45 / 1.00	-.67	.51
Learner-Instructor	15	28	5.90 / .98	28	5.77 / 1.03	-.02	.98
Learner-Content	13	27	6.03 / .98	28	5.99 / .91	-.53	.60
Learner-Interface	14	27	5.55 / 1.09	28	5.58 / 1.02	-.71	.48
SPI	13	26	5.37 / 1.02	28	5.44 / 1.05	-.14	.89

Note: 1=extremely negative;2=very negative;3=moderately negative;4=slightly negative;5=slightly positive;6=moderately positive;7=very positive;8=extremely positive

Table 4.15 Mean and Standard Deviations Comparison of Subscales by Gender.

Interaction	N	Male		Female		t-value	Sig..
		N	M SD	N	M SD		
Learner-Learner	10	43	5.30 .92	16	5.59 1.59	-.90	.37
Learner-Instructor	15	47	5.82 .89	17	5.82 1.19	.49	.63
Learner-Content	13	46	6.03 .84	17	6.18 1.08	.16	.87
Learner-Interface	14	46	5.54 .91	17	5.59 1.29	-.12	.90
SPI	13	46	5.42 .82	16	5.37 1.40	-.25	.80

Note: 1=extremely negative;2=very negative;3=moderately negative;4=slightly negative;5=slightly positive;6=moderately positive;7=very positive;8=extremely positive

Table 4.16 Interaction subscales relationship to the age of the participants in the Off-Campus Professional Agriculture Program.

Interaction	N	Correlation Coef.	Adjective
Learner-Learner	59	.20	Low
Learner-Instructor	64	.14	Low
Learner-Content	63	.64	Substantial
Learner-Interface	64	.75	Very High
Fulford	62	.30	Moderate

Table 4.17 Conventions for describing correlation (relationship)

Adjective	Size of Correlation
Perfect	+ - 1.00
Very High	+ - 0.70 to 0.99
Substantial	+ - 0.50 to 0.69
Moderate	+ - 0.30 to 0.49
Low	+ - 0.10 to 0.29
Negligible	+ - 0.01 to 0.09

Source: Davis, 1971.

CHAPTER 5
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This study was conducted to investigate on the interaction needs of distance learners. To accomplish this 113 students participating in the Off-Campus Professional Agriculture Program were mailed a Learning Experiences questionnaire designed to identify their interaction needs. The objectives of the study were as follows:

1. Describe selected demographic characteristics of students enrolled in courses offered through the Off-Campus Professional Agriculture Program.
2. Determine distance learning delivery method preferred by distance learners.
3. Compare student performance to mode of taking a course.
4. Identify interaction needs of distance learners.

The study has future implications for the Off-Campus Professional Agriculture Program at Iowa State University. This chapter will summarize and offer conclusions and recommendations for each of the objectives that guided this study.

Summary

- Sixty-seven students participated in this study
- Approximately forty-one percent of the participants were employed with agribusiness and twenty-four percent of the participants were farmers.
- More than half the participants were male.
- Almost seventy-three percent of the participants were married.
- Over three-forths of the participants were between the ages of thirty and sixty.
- More than half the participants were pursuing a degree.
- Approximately 88% of participants were part-time students.

- 48.3% of the participants were ICN students.
- More than eighty-five percent of the participants would take distance education courses again.
- Learner-Content had a substantial relationship to age of the participants.
- Learner-Interface had a very high relationship to age of the participants.

Conclusions

Most Professional Agriculture students were satisfied with the courses they took, whether they were taken via videotape or Iowa Communications network. They indicated that they would be willing to take another course again the same way, and they rated each mode highly.

Student taking courses via videotape or the ICN tended to receive similar grades for the courses. It appeared that the method of taking a course did not affect the grades they earned.

The interaction statements rated as the most negative to the students' learning experience were mainly related to human interaction between students and the instructor taking place during a class session. It appeared that students felt that lack of human interaction was slightly to moderately negative to their learning experience. These statements were most relevant in the ICN setting because live, human interaction does not exist in the videotape setting unless students view the videotape in group settings.

The interaction statements rated as the most positive to the students' learning experience were mostly statements about interaction between students and the instructor, program administration and support, and the use of computers in completing assignments. It

appears that students valued human interaction between and among themselves and the instructor. They also valued the student services they receive and the use of the computer in completing assignments.

When interaction items on the questionnaire were grouped by type of interaction, the Learner-Content scale emerged as the most important form of interaction (moderately positive) followed closely by Learner-Instructor scale (slightly positive). The scales were rated similarly regardless of whether a student took the course by videotape or in an ICN classroom. Both male and female students also rated the scales similarly. Professional Agriculture students valued their interaction with the content of the courses first and then their interaction with the instructor. Learner-Instructor interaction was easier in the ICN situation and was more difficult in the videotape class. The instructor in a videotape class could provide interaction via a Listserv, a Web conferencing board on the Internet, could encourage or require telephone calls, and possibly set up on-campus meetings periodically.

Age appeared to be a factor when students rated some of the subscales of interaction. Age was substantially correlated to the Learner-Content scale and very highly correlated to the Learner-Interface scale. The correlation between age and the overall measure of interaction known as the SPI scale was moderate. It appeared that older students placed a higher value on Learner-Content interaction and Learner-Interface interaction than did younger students. It is possible that content is more important to older students because they are looking for content in the classes that will help them in their daily jobs or life. The Learner-Interface interaction scale consists of items related to instructional technology. It is

possible that the older students see the value of instructional technology to be more important or they were strongly impressed by the technology.

Recommendations

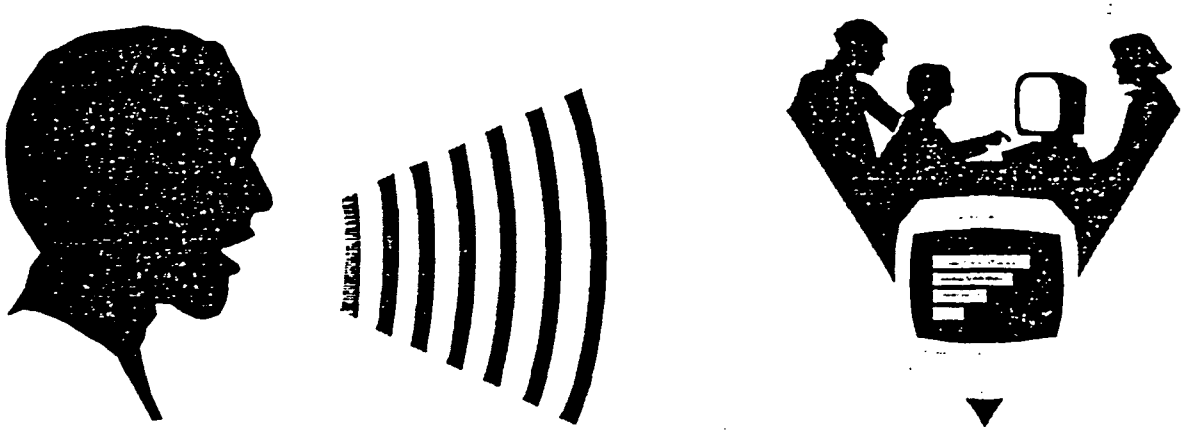
1. The Off-Campus Professional Agriculture Program should continue to offer courses by videotape and ICN. It appears that both types of courses serve the needs of students. Videotape courses appeal to students who cannot take a course at a scheduled time due to work or other time conflicts. ICN courses appeal to students who can attend a course at a scheduled time but cannot travel to the campus for the course due to time and distance.
2. Efforts should be made to improve the quality of videotape courses and ICN courses in the area of interaction. Videotape courses do not provide the opportunity for face-to-face interaction during a class session, but many other opportunities for interaction exist. Interaction can take place through the use of mail, telephone, fax and the Internet. In addition, face-to-face interaction can be arranged by having an on-campus meeting during the semester the course is offered. Face-to-face interaction is possible in an ICN course, but the instructor must plan for this type of interaction by providing time for discussion and group activities. The instructor should also arrange for other types of interaction to take place outside of class time using the same methods as for videotape courses.
3. Instructors should realize that off-campus students have a strong need to interact with the subject matter of the course. In fact, the primary reason many students take a course is their perceived need for the subject-matter being offered. With this in mind, course materials and textbooks should be readily available to the students. If a textbook is involved, the instructor should make arrangements for the students to receive a copy

when the course begins. Course handouts and materials should also be made available at the beginning of a course. Instructors should develop and disseminate complete course packets.

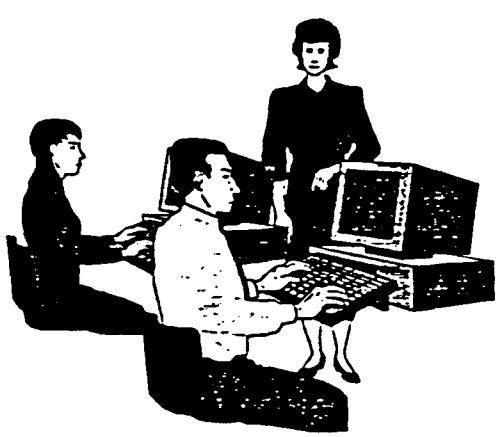
4. Instructors should be provided assistance in developing courses and course materials for delivery at a distance. This assistance could include pedagogy, technical assistance, and instructional development resources. The issue of student services should also be examined and addressed.
5. Student age was positively related to Learner-Content interaction and Learner-Interface interaction. The reasons for this relationship were not immediately apparent in this study. Research should be conducted to explore this relationship and to determine the variables involved with these findings.
6. Interaction differs greatly between videotape courses and courses delivered via the ICN. The population of students who have taken courses both ways continues to grow. Future research should separate the population into two subgroups based on mode of delivery to examine interaction needs.
7. Learning styles may affect perceived interaction needs of students. Future research should examine the issue of learning style to determine if perceived interaction needs are different.

APPENDIX A.
LEARNING EXPERIENCES QUESTIONNAIRE

LEARNING EXPERIENCES



Iowa State University
Department of Agricultural
Education & Studies



COURSE INFORMATION

Directions: Please answer the following questions related to the course you were enrolled in through the Off-Campus Professional Agriculture Program during the Spring 1997 semester.

1. What was the title or number of this course? (please specify)

   _____
   (Course title or number)

2. In what form did you take the course?

   _____ Videotape
   _____ Utilizing the Iowa Communications Network (ICN)

PLEASE TURN TO THE NEXT PAGE

DIRECTIONS: Please Read the following statements and circle the number that represents the extent to which you feel the situation would be a negative or positive learning experience. If you feel the experience does not apply to your learning, please circle **Number 9 (Does Not Apply).**

KEY	
1=	EXTREMELY NEGATIVE
2=	VERY NEGATIVE
3=	MODERATELY NEGATIVE
4=	SLIGHTLY NEGATIVE
5=	SLIGHTLY POSITIVE
6=	MODERATELY POSITIVE
7 =	VERY POSITIVE
8=	EXTREMELY POSITIVE
9=	DOES NOT APPLY

1. Communicating with instructor over telephone. 1 2 3 4 5 6 7 8

Explanation: By circling 6 this person indicated that they consider communicating with the instructor via telephone to be a moderately positive learning experience.

	Extremely Negative						Positive		Extremely Does Not Apply
1. Discussing Class assignments with instructor during class time.	1	2	3	4	5	6	7	8	9
2. Discussing class assignments with other students during class time.	1	2	3	4	5	6	7	8	9
3. The instructor frequently asks the students questions.	1	2	3	4	5	6	7	8	9
4. Discussing class assignments with professors other than class instructor.	1	2	3	4	5	6	7	8	9
5. The students seldom ask each other questions.	1	2	3	4	5	6	7	8	9
6. Leading a group discussion in class.	1	2	3	4	5	6	7	8	9
7. Working in groups during class.	1	2	3	4	5	6	7	8	9
8. Instructor praises quality of my work in class.	1	2	3	4	5	6	7	8	9

KEY	
1=	EXTREMELY NEGATIVE
2=	VERY NEGATIVE
3=	MODERATELY NEGATIVE
4=	SLIGHTLY NEGATIVE
5=	SLIGHTLY POSITIVE
6=	MODERATELY POSITIVE
7 =	VERY POSITIVE
8=	EXTREMELY POSITIVE
9=	DOES NOT APPLY

	Extremely Negative						Extremely Positive		Does Not Apply
9. The instructor frequently offers opinions to students.	1	2	3	4	5	6	7	8	9
10. Privately discussing course work with instructor.	1	2	3	4	5	6	7	8	9
11. Privately discussing course work with other students.	1	2	3	4	5	6	7	8	9
12. Making oral presentations in class.	1	2	3	4	5	6	7	8	9
13. Interaction between the instructor and the class is high.	1	2	3	4	5	6	7	8	9
14. In general, the instructor is effective in motivating the students to interact in class.	1	2	3	4	5	6	7	8	9
15. There is little interaction between students.	1	2	3	4	5	6	7	8	9
16. The instructor seldom answers the students' questions.	1	2	3	4	5	6	7	8	9
17. Students often states their opinions to the instructor.	1	2	3	4	5	6	7	8	9
18. Having to wait during class for the instructor.	1	2	3	4	5	6	7	8	9

KEY
1= EXTREMELY NEGATIVE
2= VERY NEGATIVE
3= MODERATELY NEGATIVE
4= SLIGHTLY NEGATIVE
5= SLIGHTLY POSITIVE
6= MODERATELY POSITIVE
7 = VERY POSITIVE
8= EXTREMELY POSITIVE
9= DOES NOT APPLY

	Extremely Negative						Extremely Positive		Does Not Apply
19. Using computers during class activities.	1	2	3	4	5	6	7	8	9
20. Using microphones to communicate with other students at other classroom sites.	1	2	3	4	5	6	7	8	9
21. Using computers outside of class for assignments.	1	2	3	4	5	6	7	8	9
22. Reading overheads projected over a television monitor.	1	2	3	4	5	6	7	8	9
23. The level of interaction between all participants is high.	1	2	3	4	5	6	7	8	9
24. The students often ask the instructor questions.	1	2	3	4	5	6	7	8	9
25. Viewing visuals on a monitor and listening to the instructor at the same time.	1	2	3	4	5	6	7	8	9
26. Personal apprehension of distance education technology.	1	2	3	4	5	6	7	8	9
27. Other student's fear of distance education technology.	1	2	3	4	5	6	7	8	9
28. Poor instructor use of distance education technology.	1	2	3	4	5	6	7	8	9
29. Having personal active involvement in the class.	1	2	3	4	5	6	7	8	9

KEY	
1=	EXTREMELY NEGATIVE
2=	VERY NEGATIVE
3=	MODERATELY NEGATIVE
4=	SLIGHTLY NEGATIVE
5=	SLIGHTLY POSITIVE
6=	MODERATELY POSITIVE
7 =	VERY POSITIVE
8=	EXTREMELY POSITIVE
9=	DOES NOT APPLY

	Extremely Negative						Extremely Positive		Does Not Apply
30. Orientation session on how to use the distance education technology.	1	2	3	4	5	6	7	8	9
31. Being physically separated from the teacher. (such as being in a remote location)	1	2	3	4	5	6	7	8	9
32. Instructor asks questions related to class content of all students.	1	2	3	4	5	6	7	8	9
33. Instructor asks me a question related to class content.	1	2	3	4	5	6	7	8	9
34. The instructor seldom answers the students' questions.	1	2	3	4	5	6	7	8	9
35. Instructor provides students' guidance regarding in-class assignments.	1	2	3	4	5	6	7	8	9
36. In class, students seldom state their opinions to each other.	1	2	3	4	5	6	7	8	9
37. Students seldom answer each other's questions.	1	2	3	4	5	6	7	8	9
38. Students seldom answer questions that the instructor asks.	1	2	3	4	5	6	7	8	9
39. Following a rigid outline for each class.	1	2	3	4	5	6	7	8	9
40. Interaction is low in class.	1	2	3	4	5	6	7	8	9
41. Classmate's enthusiasm for class.	1	2	3	4	5	6	7	8	9

KEY	
1=	EXTREMELY NEGATIVE
2=	VERY NEGATIVE
3=	MODERATELY NEGATIVE
4=	SLIGHTLY NEGATIVE
5=	SLIGHTLY POSITIVE
6=	MODERATELY POSITIVE
7=	VERY POSITIVE
8=	EXTREMELY POSITIVE
9=	DOES NOT APPLY

	Extremely Negative						Extremely Positive		Does Not Apply
42. Personal enthusiasm for class.	1	2	3	4	5	6	7	8	9
43. Taking written examinations in class.	1	2	3	4	5	6	7	8	9
44. Taking in-class examinations via computer.	1	2	3	4	5	6	7	8	9
45. The use of peer teachers.	1	2	3	4	5	6	7	8	9
46. Program support staff.	1	2	3	4	5	6	7	8	9
47. Program Advisor.	1	2	3	4	5	6	7	8	9
48. Financial aid staff.	1	2	3	4	5	6	7	8	9
49. Required course readings.	1	2	3	4	5	6	7	8	9
50. Instructor visiting off-campus site class.	1	2	3	4	5	6	7	8	9
51. Receiving course materials on-time.	1	2	3	4	5	6	7	8	9
52. Help from remote site-technicians.	1	2	3	4	5	6	7	8	9
53. Class discussions with remote-site facilitator.	1	2	3	4	5	6	7	8	9
54. Scheduling time to work on class assignments.	1	2	3	4	5	6	7	8	9
55. Scheduling time for class.	1	2	3	4	5	6	7	8	9
56. Instructor evaluation of my class work.	1	2	3	4	5	6	7	8	9
57. Peer evaluation of my class work.	1	2	3	4	5	6	7	8	9

KEY	
1=	EXTREMELY NEGATIVE
2=	VERY NEGATIVE
3=	MODERATELY NEGATIVE
4=	SLIGHTLY NEGATIVE
5=	SLIGHTLY POSITIVE
6=	MODERATELY POSITIVE
7=	VERY POSITIVE
8=	EXTREMELY POSITIVE
9=	DOES NOT APPLY

	Extremely Negative						Extremely Positive		Does Not Apply
58. Personal evaluation of my class work.	1	2	3	4	5	6	7	8	9
59. University admissions staff workers.	1	2	3	4	5	6	7	8	9
60. Accessibility to library resources.	1	2	3	4	5	6	7	8	9
61. Exams and quizzes given by a facilitator.	1	2	3	4	5	6	7	8	9
62. Financial aid procedures.	1	2	3	4	5	6	7	8	9
63. Use of guest speakers in class.	1	2	3	4	5	6	7	8	9
64. Being the only student at remote-site.	1	2	3	4	5	6	7	8	9
65. In-class group activities.	1	2	3	4	5	6	7	8	9

DEMOGRAPHICS

1. What is your age?

   _____ **Years**

2. What is your gender? (check one)

   _____**Male**
   _____**Female**

3. Which of the following applies to you? (check one)

   _____**Married**
   _____**Single**
   _____**Divorced**
   _____**Widowed**

4. What is your current occupation? (Check one)

   _____**Farming**
   _____**Agribusiness**
   _____**Agricultural Extension**
   _____**Agricultural Education Teacher**
   _____**Other (Please Specify)** _____

5. Are you a full or part-time student? (Check one)

   _____**Full-time**
   _____**Part-time**

6. Why did you enroll in this course? (Check **only** one)

   _____**Pursuing a degree**
   _____**To improve my business/career performance**
   _____**For personal interest/hobby**
   _____**Other (Please specify)** _____

7. Overall, how satisfied were you with this class? (check one)

_____**Very dissatisfied**
_____**Dissatisfied**
_____**Somewhat dissatisfied**
_____**Somewhat satisfied**
_____**Satisfied**
_____**Very Satisfied**

8. Would you take another course taught this way? (Check one)

_____**Yes**
_____**No**

THANK YOU!!

APPENDIX B
HUMAN SUBJECTS APPROVAL FORM

Information for Review of Research Involving Human Subjects

Iowa State University

(Please type and use the attached instructions for completing this form)

1. Title of Project Perceived Interaction Needs of Distance Learners

2. I agree to provide the proper surveillance of this project to insure that the rights and welfare of the human subjects are protected. I will report any adverse reactions to the committee. Additions to or changes in research procedures after the project has been approved will be submitted to the committee for review. I agree to request renewal of approval for any project continuing more than one year.

Timika M. Gray	4/22/97	
Typed Name of Principal Investigator	Date	Signature of Principal Investigator
Agricultural Education	23B Curtiss Hall	
Department	Campus Address	
(515) 294-1510		
Phone Number to Report Results		

3. Signatures of other investigators

	Date	Relationship to Principal Investigator
	4/22/97	Major Professor

4. Principal Investigator(s) (check all that apply)
☐ Faculty ☐ Staff ☒ Graduate Student ☐ Undergraduate Student

5. Project (check all that apply)
☐ Research ☒ Thesis or dissertation ☐ Class project ☐ Independent Study (490, 590, Honors project)

6. Number of subjects (complete all that apply)
___ # Adults, non-students X # ISU student ___ # minors under 14 ___ # minors 14 - 17 ___ other (explain)

7. Brief description of proposed research involving human subjects: (See instructions, Item 7. Use an additional page if needed.)

The purpose of this study is to determine the perceived interaction needs of distanc learners and their performance in agricultural courses taught via distance education through the Off-Campus Professional Agricultural Program at Iowa State University. The objectives are as follows:

1. Describe selected demographic characteristics of students enrolled in courses offered through the Professional Agriculture Program.
2. Determine distance learning delivery method preferred by distance lear
3. Identify learning practices of distance learners.
4. Compare student performance to interaction needs of distance learners.

(Please do not send research, thesis, or dissertation proposals.)

8. Informed Consent:
☐ Signed informed consent will be obtained. (Attach a copy of your form.)
☒ Modified informed consent will be obtained. (See instructions, item 8.)
☐ Not applicable to this project.

9. Confidentiality of Data: Describe below the methods to be used to ensure the confidentiality of data obtained. (See instructions, item 9.)

Individual responses will not be made available to anyone. We will only be using group data. The individual questionnaires will be destroyed following analysis of group data. The coding on the questionnaires will only be used as a means to identify non-respondents. All coding will be removed upon receipt of the questionnaire.

10. What risks or discomfort will be part of the study? Will subjects in the research be placed at risk or incur discomfort? Describe any risks to the subjects and precautions that will be taken to minimize them. (The concept of risk goes beyond physical risk and includes risks to subjects' dignity and self-respect as well as psychological or emotional risk. See instructions, item 10.)

N/A

11. CHECK ALL of the following that apply to your research:

___ A. Medical clearance necessary before subjects can participate
___ B. Administration of substances (foods, drugs, etc.) to subjects
___ C. Physical exercise or conditioning for subjects
___ D. Samples (Blood, tissue, etc.) from subjects
___ E. Administration of infectious agents or recombinant DNA
___ F. Deception of subjects
___ G. Subjects under 14 years of age and/or ___ Subjects 14 - 17 years of age
___ H. Subjects in institutions (nursing homes, prisons, etc.)
___ I. Research must be approved by another institution or agency (Attach letters of approval)

If you checked any of the items in 11, please complete the following in the space below (include any attachments):

Items A–E — Describe the procedures and note the proposed safety precautions being taken.

Items D–E — The principal investigator should send a copy of this form to Environmental Health and Safety, 118 Agronomy Lab for review.

Item F — Describe how subjects will be deceived; justify the deception; indicate the debriefing procedure, including the timing and information to be presented to subjects.

Item G — For subjects under the age of 14, indicate how informed consent from parents or legally authorized representatives as well as from subjects will be obtained.

Items H–I — Specify the agency or institution that must approve the project. If subjects in any outside agency or institution are involved, approval must be obtained prior to beginning the research, and the letter of approval should be filed.

Checklist for Attachments and Time Schedule

The following are attached (please check):

12. ☒ Letter or written statement to subjects indicating clearly:
    a) purpose of the research
    b) the use of any identifier codes (names, #'s), how they will be used, and when they will be removed (see Item 17)
    c) an estimate of time needed for participation in the research and the place
    d) if applicable, location of the research activity
    e) how you will ensure confidentiality
    f) in a longitudinal study, note when and how you will contact subjects later
    g) participation is voluntary; nonparticipation will not affect evaluations of the subject

13. ☐ Consent form (if applicable)

14. ☐ Letter of approval for research from cooperating organizations or institutions (if applicable)

15. ☒ Data-gathering instruments

16. Anticipated dates for contact with subjects:

First Contact	Last Contact
May 5, 1997	August 31, 1997
Month / Day / Year	Month / Day / Year

17. If applicable: anticipated date that identifiers will be removed from completed survey instruments and/or audio or visual tapes will be erased:

December 31, 1997
Month / Day / Year

18. Signature of Departmental Executive Officer | Date | Department or Administrative Unit

[signature] | 4-23-97 | [signature]

19. Decision of the University Human Subjects Review Committee:

☒ Project Approved ☐ Project Not Approved ☐ No Action Required

Patricia M. Keith | 5-6-97 | [signature]

Name of Committee Chairperson | Date | Signature of Committee Chairperson

APPENDIX C
LETTER TO THE INSTRUCTOR

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Department of Agricultural Education and Studies
201 Curtiss Hall
Ames, Iowa 50011-1050
Administration and Graduate Programs 515 294-5202
Research and Extension Programs 515 294-5872
Undergraduate Programs 515 294-6022

July 14, 1997

Dear Instructor,

The Agricultural Education and Studies Department at Iowa State University is conducting research to identify student perceptions of interaction in a distance education setting. Students who have taken courses via the Iowa Communications Network comprise the population of the study. The needs of distance learners cannot be determined without the input of those people who are taking the courses. Therefore, your students' perceptions and comments are critical to the study of this issue.

The survey will consist of three parts. There will be a general course information section, a section that contains statements regarding perceptions of interaction, and a section that identifies selected demographic data about the students.

The information that the students provide will be held in strict confidence. Individual responses will not be made available to anyone. We are only interested in group data. Data will not be grouped under course headings. The individual questionnaires will be destroyed following analysis of group data. The coding on the questionnaire is a means of contacting non-respondents. All coding will be removed upon receipt of the questionnaire. The data will be used to complete a M.S. thesis and provide information for developing educational courses for distance learners. If you have any questions about the survey, please contact W.Wade Miller.

We appreciate your participation.

Sincerely,

Timika M. Gray
Research Assistant

W. Wade Miller
Professor

APPENDIX D
COVER LETTER FOR FIRST MAILING

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Department of Agricultural Education and Studies
201 Curtiss Hall
Ames, Iowa 50011-1050
Administration and Graduate Programs 515 294-5002
Research and Extension Programs 515 294-5872
Undergraduate Programs 515 294-0024

May 27, 1997

Dear Student,

The Agricultural Education and Studies Department at Iowa State University is conducting research to identify student perceptions of interaction in a distance education setting. The Off-Campus Professional Agricultural Program students have been selected to participate in the study. The interaction needs of distance learners cannot be studied without the input of those people who are taking these courses. Therefore, your perceptions and comments are critical to the study of this issue.

Please complete the enclosed questionnaire. The survey consist of three parts. There is a general course information section, a section that contains statements regarding perceptions of interaction, and a section that identifies selected demographic data about the students in the Professional Agriculture Program. Please complete all sections of the questionnaire. The questionnaire should take approximately ten minutes to complete.

The information you provide will be held in strict confidence. Individual responses will not be made available to anyone. We are only interested in group data. The individual questionnaires will be destroyed following analysis of group data. The coding on the questionnaire is a means of contacting non-respondents. All coding will be removed upon receipt of the questionnaire. The data will be used to complete a Masters degree and provide information for developing educational courses for distance learners. Participation is voluntary and if you do not wish to respond, please return the unused questionnaire.

We hope you will take a few minutes to help us. Please return the completed survey by **June 15, 1997**. A self-addressed return envelope is provided for your convenience in returning the questionnaire. We appreciate your participation.

If you have any questions, please feel free to contact us at anytime.

Sincerely,

Timika M. Gray
Research Assistant

W. Wade Miller
Professor

APPENDIX E
FOLLOW-UP LETTER FOR FIRST MAILING

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Department of Agricultural Education and Studies
201 Curtiss Hall
Ames, Iowa 50011-1050
Administration and Graduate Programs 515 294-5004
Research and Extension Programs 515 294-5872
Undergraduate Programs 515 294-6024

June 16, 1997

To: Off-Campus Professional Agriculture Student

From: W. Wade Miller, Professor
Timika M. Gray, Research Assistant

RE: Study on Perceptions of Interaction Needs of Distance Learners

On May 27, 1997, you were mailed a questionnaire on the "Learning Experiences of students in the Off-Campus Professional Agriculture Program." Many survey participants have returned their questionnaires and we thank you for your input. Some participants, however, as of this date, have not returned the questionnaire. For the study to be successful, your input is needed. It would only take ten minutes to complete the survey. Your input would be greatly appreciated.

Please disregard this memo if you have already returned the questionnaire. If you have not yet completed and returned your survey, we would appreciate your doing so soon.

Thank you very much for your assistance and cooperation in this matter.

APPENDIX F
COVER LETTER FOR SECOND MAILING

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Department of Agricultural Education and Studies
201 Curtiss Hall
Ames, Iowa 50011-1050
Administration and Graduate Programs 515 294-5924
Research and Extension Programs 515 294-5862
Undergraduate Programs 515 294-6022

July 18, 1997

Dear Student,

We need your help!!! On June 16, 1997 you should have received a questionnaire about the Learning Experiences of students taken courses via the Iowa Communications Network. Many survey participants have returned their questionnaire and we appreciate their efforts. To our knowledge we have not yet received a questionnaire from you.

In order for this study to be successful it is important to have your input. We recognized this may be a busy time for you, but we hope you will respond to the study. We really would appreciate having your completed questionnaire returned.

We have enclosed another copy of the questionnaire and a self-addressed stamped envelope for your convenience in responding to this important study. We encourage you to a take a few minutes, today, to complete the questionnaire and mail it back to us by August 1, 1997.

Please disregard this letter if you have already returned the questionnaire. Thank you for your assistance and cooperation in this matter.

Sincerely,

Timika Gray
Timika M. Gray
Research Assistant

W. Wade Miller
W.Wade Miller
Professor

APPENDIX G
FOLLOW-UP LETTER FOR SECOND MAILING

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Department of Agricultural Education and Studies
201 Curtiss Hall
Ames, Iowa 50011-1050
Administration and Graduate Programs 515 294-8801
Research and Extension Programs 515 294-8772
Undergraduate Programs 515 294-8822

August 12, 1997

To: Students taking courses via Iowa Communications Network (ICN)

From: W. Wade Miller W.W.M.
Timika M. Gray TMG

RE: Study on Learning Experiences

On July 15, 1997, you were sent a questionnaire on "Learning Experiences". Many survey participants have returned their questionnaires and we thank you for your input. Some participants, however, as of this date, have not returned the questionnaire. For the study to be successful, we need your input. Please take a few minutes to complete the survey. We would appreciate your input.

Please disregard this memo if you have already returned the questionnaire. If you have not yet completed and returned the survey, we would appreciate your doing so by August 25, 1997.

Thank you very much for your assistance and cooperation in this matter.

APPENDIX H
QUESTIONS INCLUDED IN THE SUBSCALES

Learner-Learner

Discussing class assignments with other students during class time. (2)*
The students seldom ask each other questions. (5)
Working in groups during class. (7)
Privately discussing course work with other students. (10)
There is little interaction between students. (15)
In class, students seldom state their opinions to each other. (36)
Students seldom answer each other's questions. (37)
The use of peer teachers. (45)
Peer evaluation of my class work. (57)
In-class group activities. (65)

Learner-Instructor

Discussing class assignments with instructor during class time. (1)
The instructor frequently asks the students questions. (3)
Instructor praises quality of my work in class. (8)
The instructor frequently offers opinions to students. (9)
Privately discussing course work with instructor. (10)
Interaction between the instructor and the class is high. (13)
In general, the instructor is effective in motivating the students to interact in class. (14)
The instructor seldom answers the students' questions. (16)
Students often states their opinions to the instructor. (17)
The students often ask the instructor questions. (24)
Instructor asks questions related to class content of all students. (32)
Students seldom answer questions that the instructor asks. (38)
Instructor visiting off-campus site class. (50)
Instructor evaluation of my class work. (56)

Learner-Content

Leading a group discussion in class. (6)
Making oral presentations in class. (12)
Having personal active involvement in the class. (29)
Instructor asks me a question related to class content. (33)
Instructor provides students' guidance regarding in-class assignments. (35)
Following a rigid outline for each class. (39)
Required course readings. (49)
Scheduling time work on class assignments. (54)
Scheduling time for class. (55)
Personal evaluation of my class work. (58)
Accessibility to library resources. (60)
Exams and quizzes given by facilitator. (61)
Use guest speakers in class. (63)

Learner-Interface

Having to wait during class for the instructor. (18)
Using computers during class activities. (19)
Using microphones to communicate with other students at other classroom sites. (20)
Using computers outside of class for assignments. (21)
Reading overheads projected over a television monitor. (22)
Viewing visuals on a monitor and listening to the instructor at the same time. (25)
Personal apprehension of distance education technology. (26)
Other student's fear of distance education technology. (27)
Poor instructor use of distance education technology. (28)
Orientation session on how to use the distance education technology. (30)
Being physically separated from the teacher. (such as being at a remote site) (31)
Taking written examinations in class. (43)
Taking in-class examinations via computer. (44)
Being the only student at a remote site. (64)

SPI

The instructor frequently asks the students questions. (3)
The students seldom ask each other questions. (5)
The instructor frequently offers opinions to students. (9)
Interaction between the instructor and class is high. (13)
In general, the instructor is effective in motivating the students to interact in class. (14)
There is little interaction between students. (15)
The instructor seldom answers the students' questions. (16)
Students often states their opinions to the instructor. (17)
The level of interaction between all participants is high. (23)
The students often ask the instructor questions. (24)
Students seldom answer each other's questions. (37)
Students seldom answer questions that the instructor asks. (38)
Interaction is low in class. (40)

*** (#) represents number that item appears on questionnaire.**

APPENDIX I
MEANS AND STANDARD DEVIATIONS
OF SIXTY-FIVE INTERACTION STATEMENTS

Means and Standard Deviation of Interaction Statements

Question	N	Mean	Std. Dev.	Question	N	Mean	Std. Dev.
1	41	6.15	1.44	34	41	3.81	2.37
2	39	6.23	1.31	35	52	6.39	1.47
3	56	6.04	1.30	36	44	4.32	1.54
4	22	5.36	1.50	37	41	4.12	1.57
5	43	4.62	1.77	38	48	4.44	1.77
6	30	5.43	1.60	39	52	4.89	1.53
7	35	5.60	1.59	40	48	3.81	1.78
8	34	5.56	1.85	41	53	6.00	1.54
9	57	6.04	1.31	42	61	6.51	1.46
10	55	6.44	1.34	43	37	5.81	1.45
11	41	6.49	1.10	44	17	5.53	1.59
12	22	5.55	1.54	45	29	6.00	1.51
13	56	6.21	1.63	46	51	6.53	1.32
14	56	6.07	1.75	47	50	6.70	1.42
15	50	4.30	1.67	48	22	5.86	1.58
16	47	4.15	2.43	49	53	6.08	1.40
17	56	5.84	1.25	50	18	5.83	1.50
18	28	3.64	2.16	51	57	6.44	1.56
19	37	6.41	1.42	52	29	6.14	1.53

Means and Standard Deviations of Interaction Statements Continued

Question	N	Mean	Std. Dev.	Question	N	Mean	Std. Dev.
20	36	5.64	1.22	53	23	6.09	1.31
21	47	6.49	1.37	54	53	5.66	1.47
22	51	5.96	1.65	55	55	6.16	1.36
23	58	6.00	1.46	56	57	6.40	1.53
24	59	6.22	1.57	57	24	5.96	.96
25	54	6.13	1.50	58	60	6.40	1.03
26	48	6.13	1.36	59	51	6.14	1.28
27	30	4.77	1.52	60	37	5.65	1.65
28	43	4.05	2.02	61	45	6.16	1.36
29	49	6.06	1.49	62	23	5.57	1.41
30	42	5.26	1.81	63	55	6.67	1.33
31	50	4.68	1.53	64	22	4.59	2.11
32	54	6.19	1.30	65	36	6.31	1.06
33	44	6.41	1.13				

Note: 1=extremely negative;2=very negative;3=moderately negative;4=slightly negative;5=slightly positive;6=moderately positive;7=very positive;8=extremely positive

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